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Gmeiner et al.

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(54) **METHOD, SYSTEM AND APPARATUS FOR LOCATION AND TIME-BASED MESSAGING USING TEXT-BASED TAGS**

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(22) Filed: **Aug. 28, 2014**

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(51) **Int. Cl.**

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H04W 4/12	(2009.01)
H04W 4/02	(2009.01)

(52) **U.S. Cl.**

CPC . ***H04W 4/12*** (2013.01); ***H04W 4/02*** (2013.01)

(58) **Field of Classification Search**

CPC H04W 4/12; H04W 4/02
USPC 455/412.1, 466, 445, 411; 709/206, 709/204; 715/273
See application file for complete search history.

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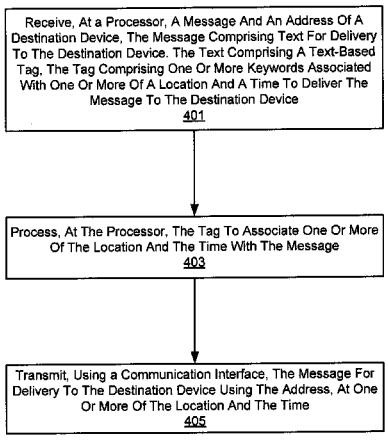
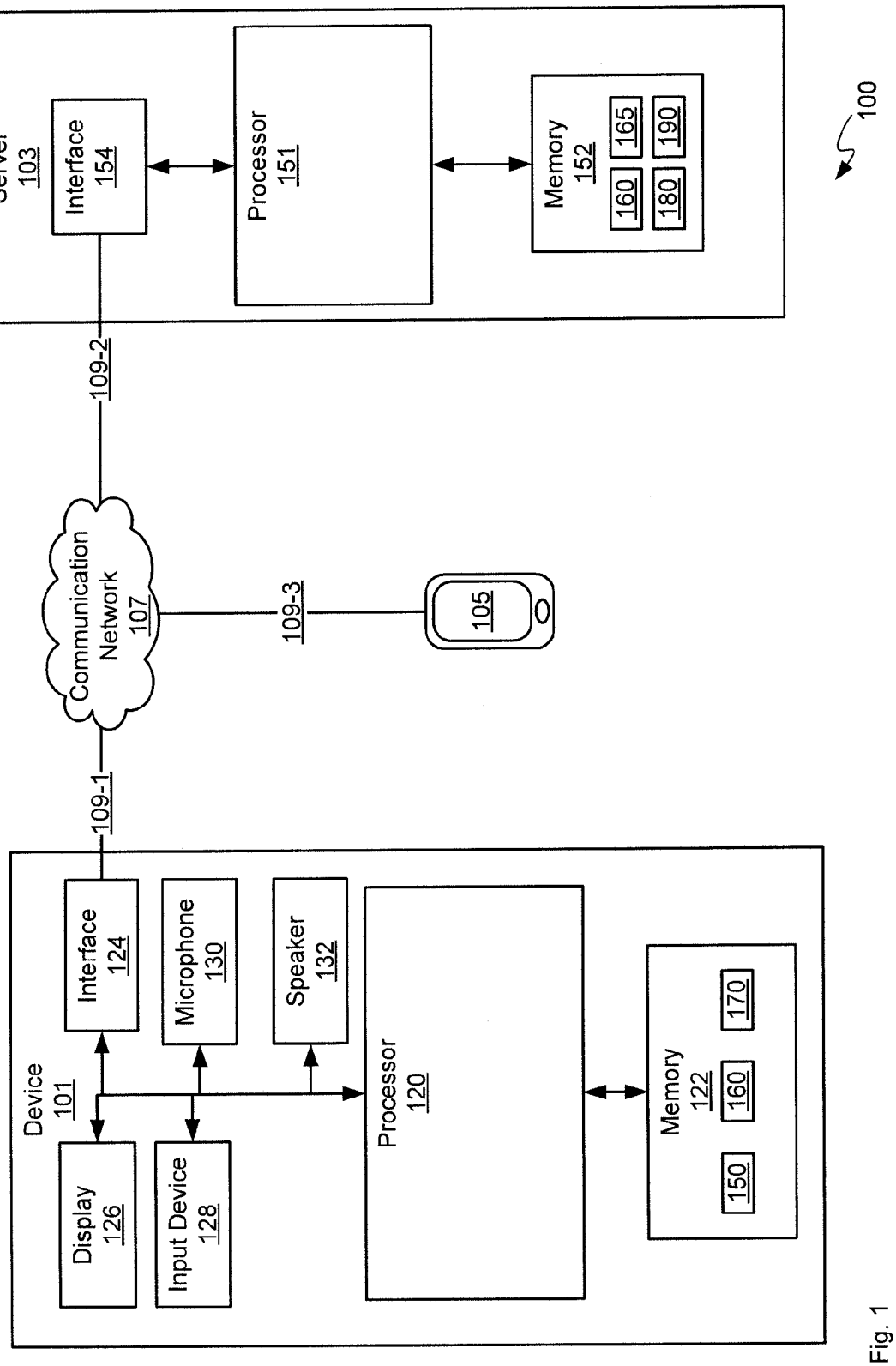
(57) **ABSTRACT**

A method, system and apparatus for location and time-based messaging using text-based tags is provided. A message and an address of a destination device is received at a processor of a device, the message comprising text for delivery to the destination device, the text comprising and a text-based tag in the text, the tag comprising one or more keywords associated with one or more of a location and a time to deliver the message to the destination device. The tag is processed, at the processor, to associate one or more of the location and the time with the message. The message is transmitted, using the communication interface, for delivery to the destination device using the address, at one or more of the location and the time.

18 Claims, 13 Drawing Sheets

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103
Interface
154
Processor
151
Memory
152
160
165
180
190
100
109-2
Communication
Network
107
109-3
105
109-1
Device
101
Interface
124
Microphone
130
Speaker
132
Processor
120
Memory
122
150
160
170
Display
126
Input Device
128

Fig. 1

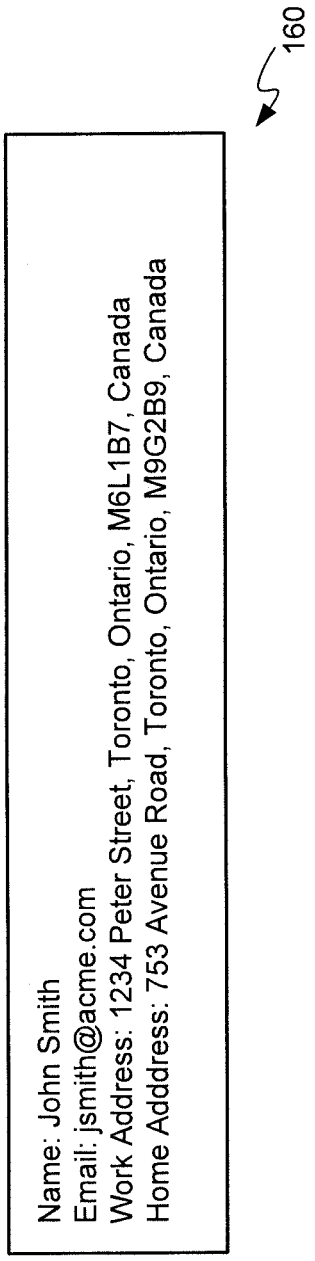

160
Name: John Smith
Email: jsmith@acme.com
Work Address: 1234 Peter Street, Toronto, Ontario, M6L1B7, Canada
Home Adddress: 753 Avenue Road, Toronto, Ontario, M9G2B9, Canada

Fig. 2

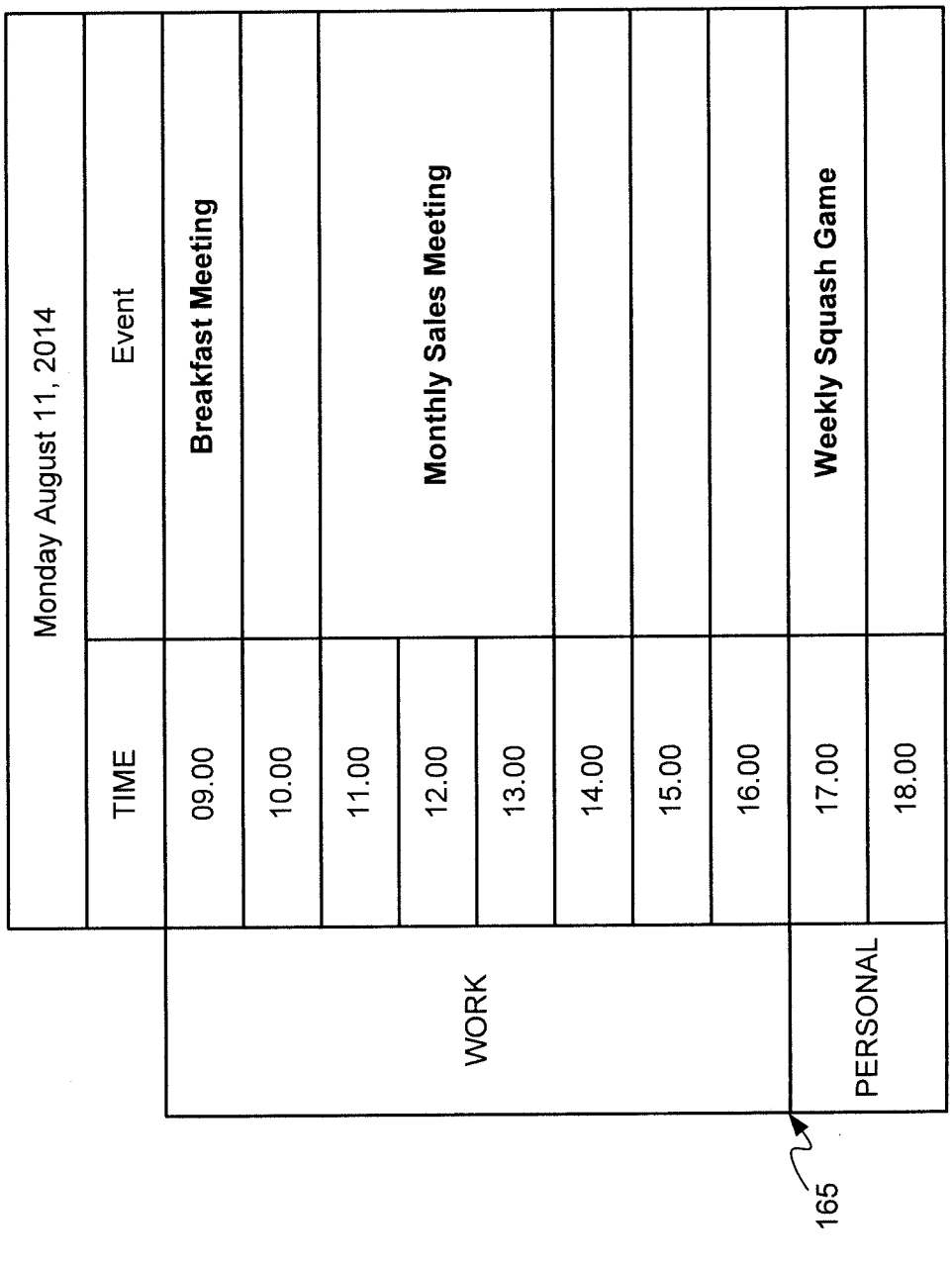

Monday August 11, 2014
Event
TIME
09.00
10.00
11.00
12.00
13.00
14.00
15.00
16.00
17.00
18.00
Breakfast Meeting
Monthly Sales Meeting
Weekly Squash Game
WORK
PERSONAL
165

Fig. 3

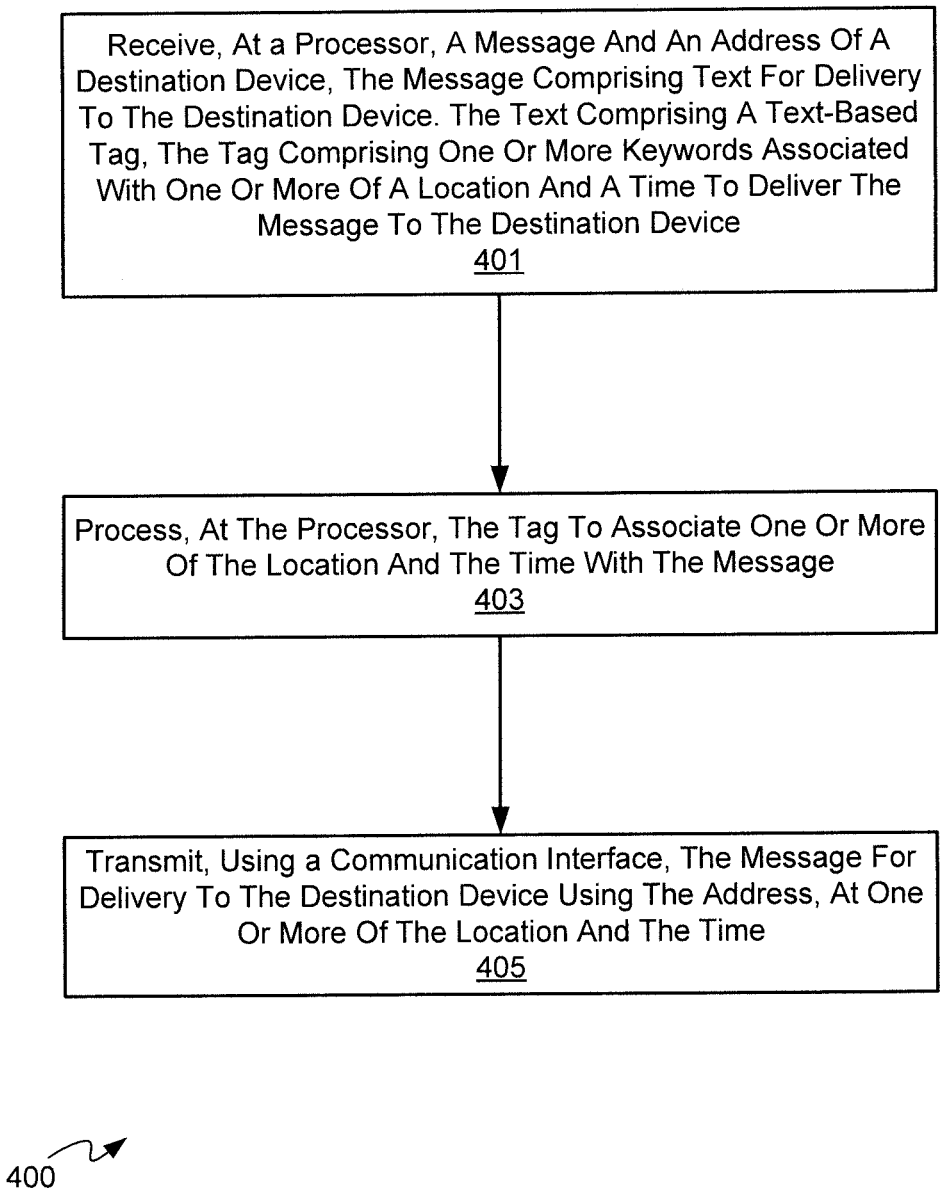

Receive, At a Processor, A Message And An Address Of A Destination Device, The Message Comprising Text For Delivery To The Destination Device. The Text Comprising A Text-Based Tag, The Tag Comprising One Or More Keywords Associated With One Or More Of A Location And A Time To Deliver The Message To The Destination Device
401
Process, At The Processor, The Tag To Associate One Or More Of The Location And The Time With The Message
403
Transmit, Using a Communication Interface, The Message For Delivery To The Destination Device Using The Address, At One Or More Of The Location And The Time
405
400

Fig. 4

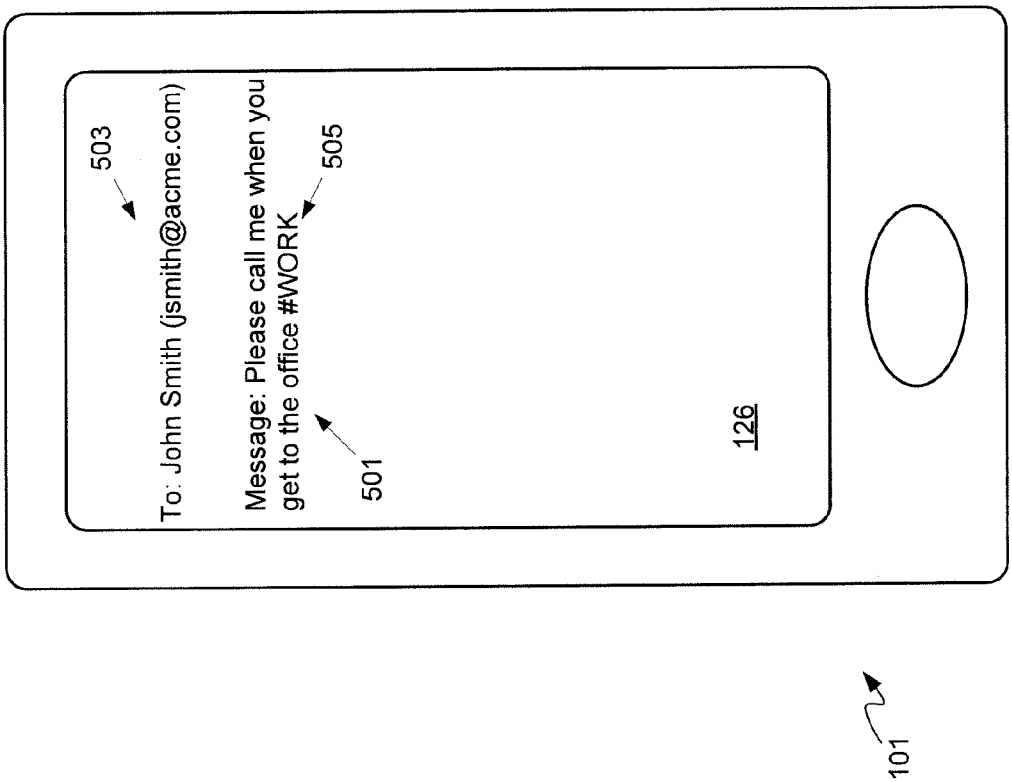
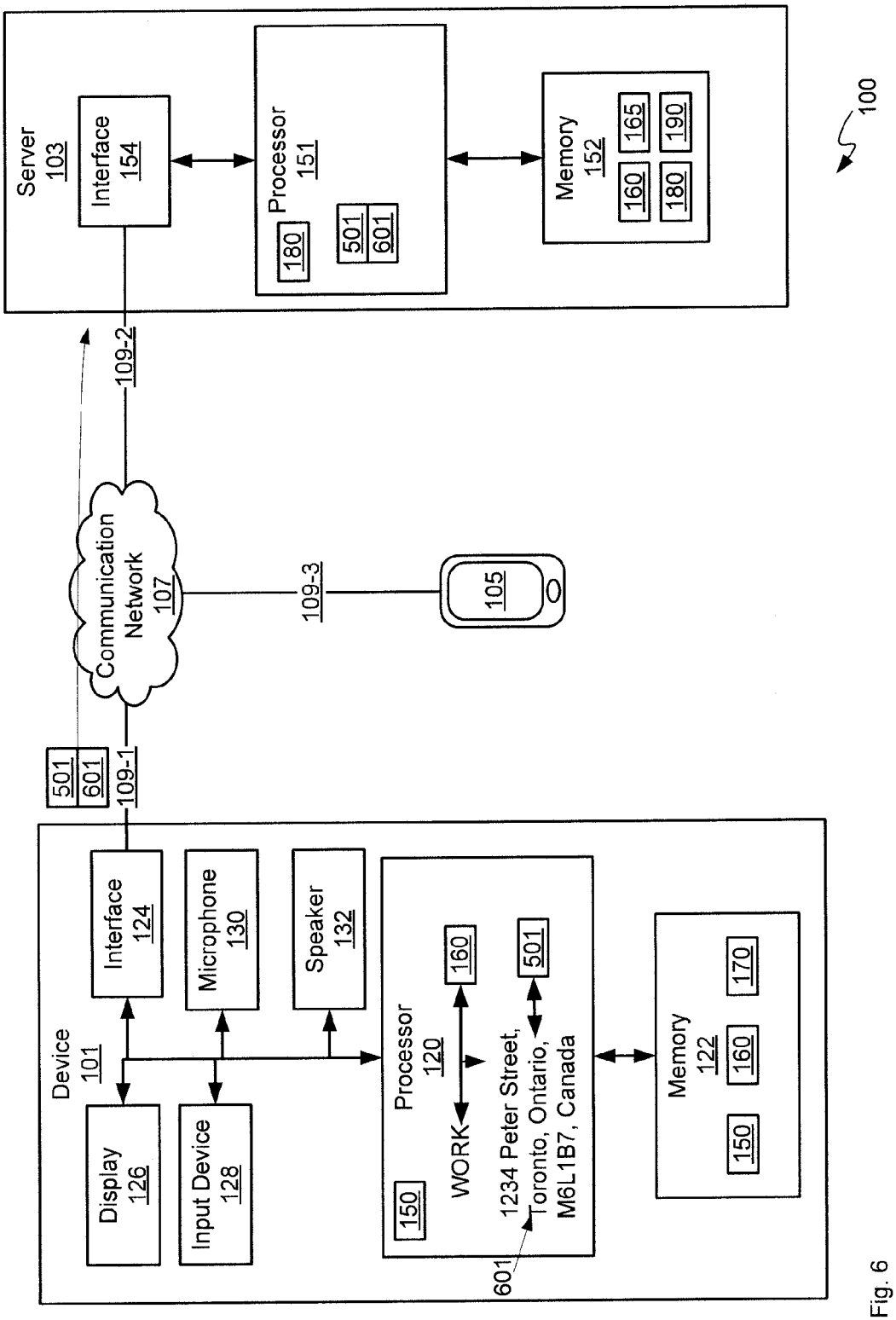

503
To: John Smith (jsmith@acme.com)
Message: Please call me when you get to the office #WORK
505
501
126
101

Fig. 5


Server
103
Interface
154
Processor
151
180
501
601
Memory
152
160
165
180
190
100
109-2
Communication
Network
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109-3
105
501
601
109-1
Device
101
Interface
124
Microphone
130
Speaker
132
Display
126
Input Device
128
Processor
120
150
WORK
160
1234 Peter Street,
Toronto, Ontario,
M6L1B7, Canada
501
601
Memory
122
150
160
170

Fig. 6

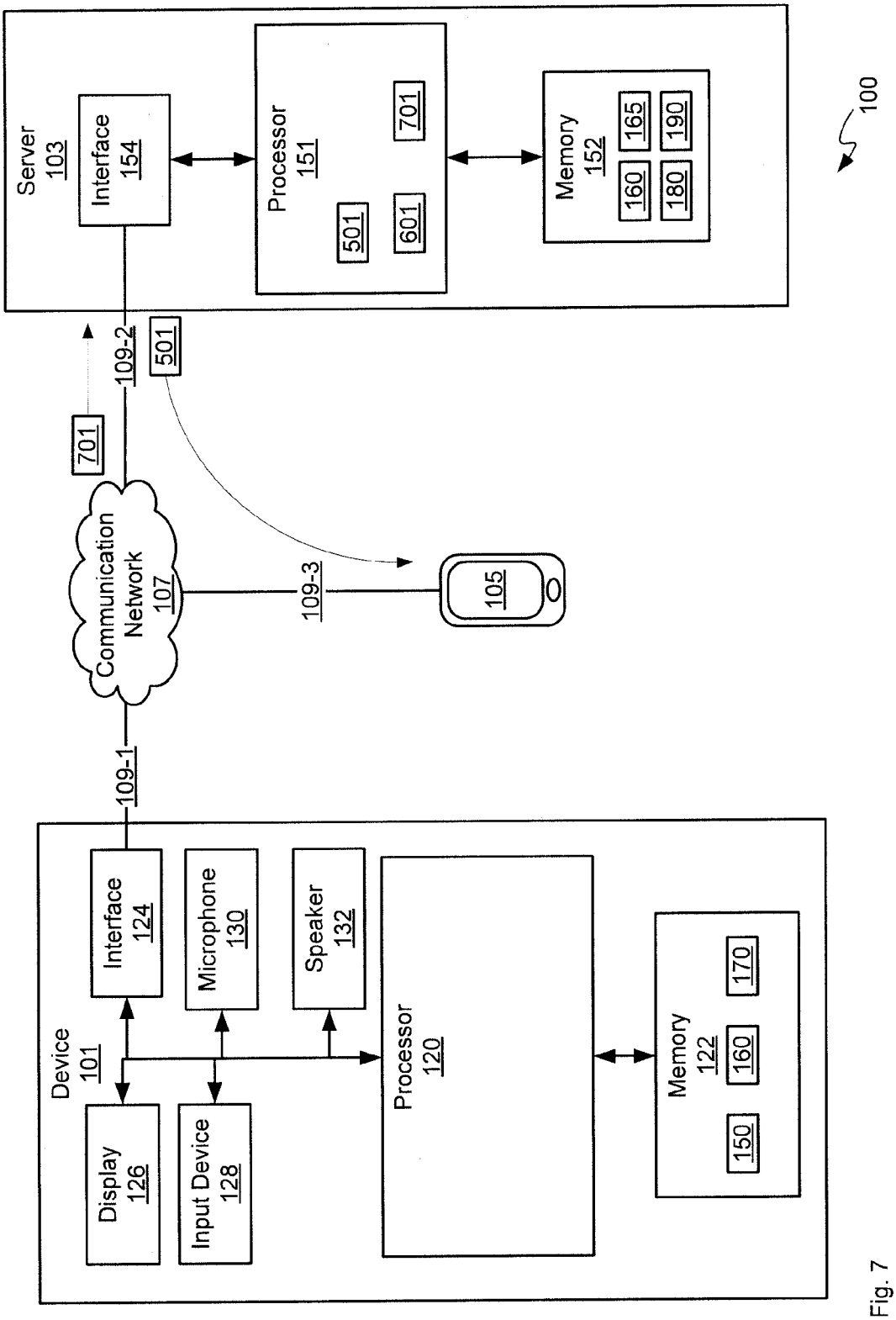
Server
103
Interface
154
Processor
151
501
601
701
Memory
152
160
165
180
190
100
701
109-2
501
Communication
Network
107
109-3
105
109-1
Device
101
Interface
124
Microphone
130
Speaker
132
Processor
120
Memory
122
150
160
170
Display
126
Input Device
128

Fig. 7

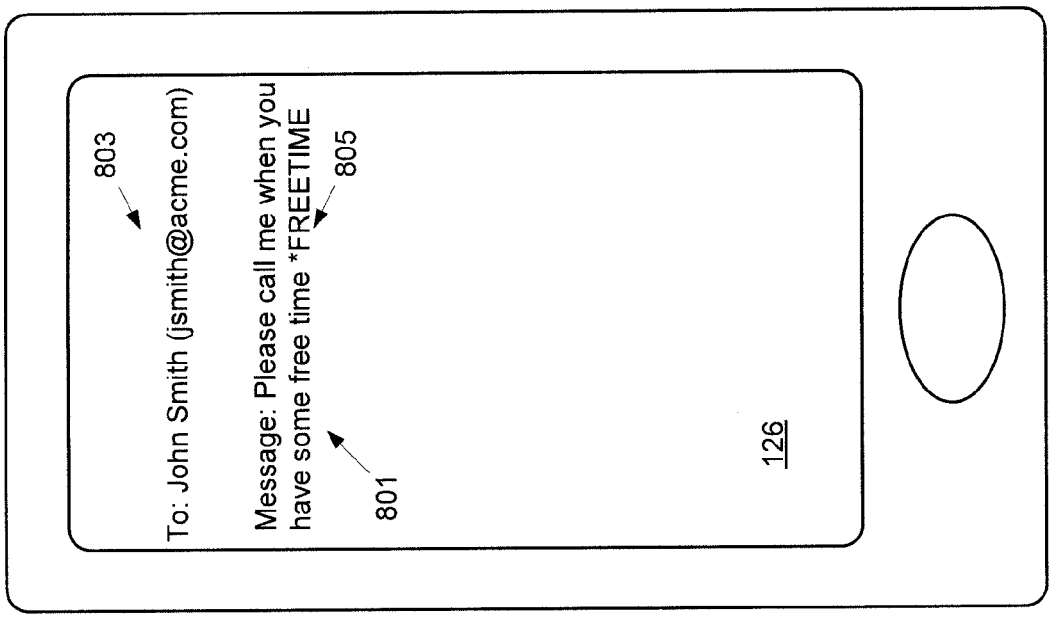
803
To: John Smith (jsmith@acme.com)
Message: Please call me when you have some free time *FREETIME
805
801
126
101

Fig. 8

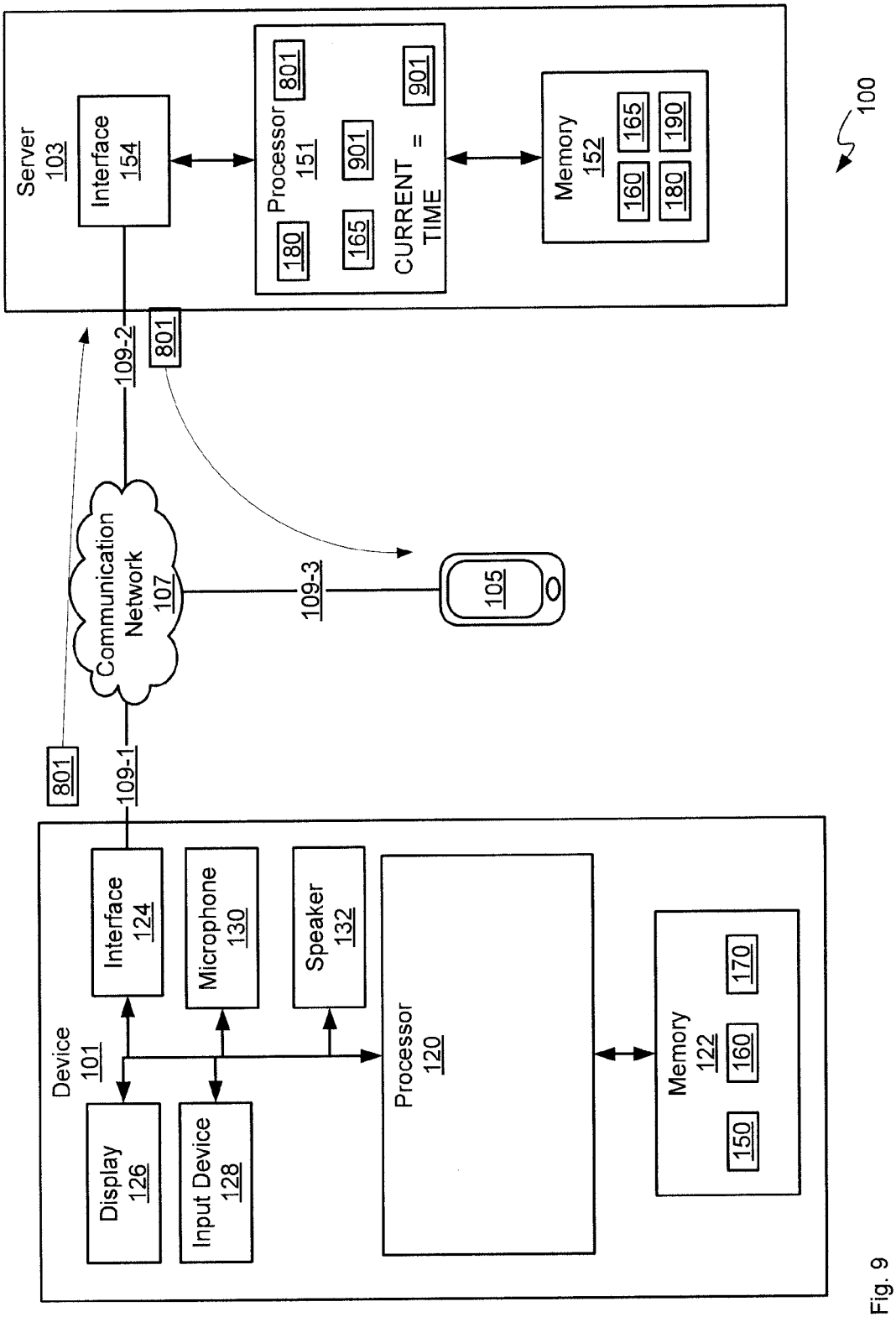
Server
103
Interface
154
Processor
151
801
180
165
901
CURRENT = TIME
901
Memory
152
160
165
180
190
100
801
109-2
801
Communication Network
107
109-3
105
801
109-1
Device
101
Interface
124
Microphone
130
Speaker
132
Processor
120
Memory
122
170
160
150
Display
126
Input Device
128

Fig. 9

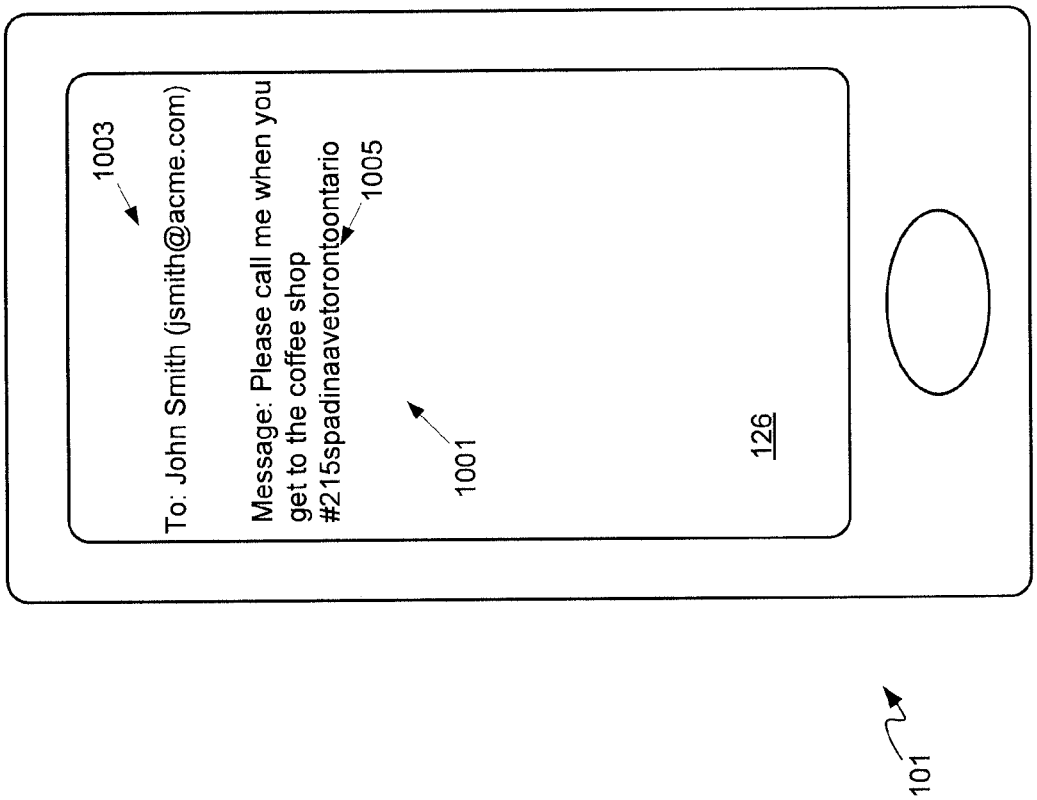
1003
To: John Smith (jsmith@acme.com)
Message: Please call me when you get to the coffee shop #215spadinaavetorontoontario
1005
1001
126
101

Fig. 10

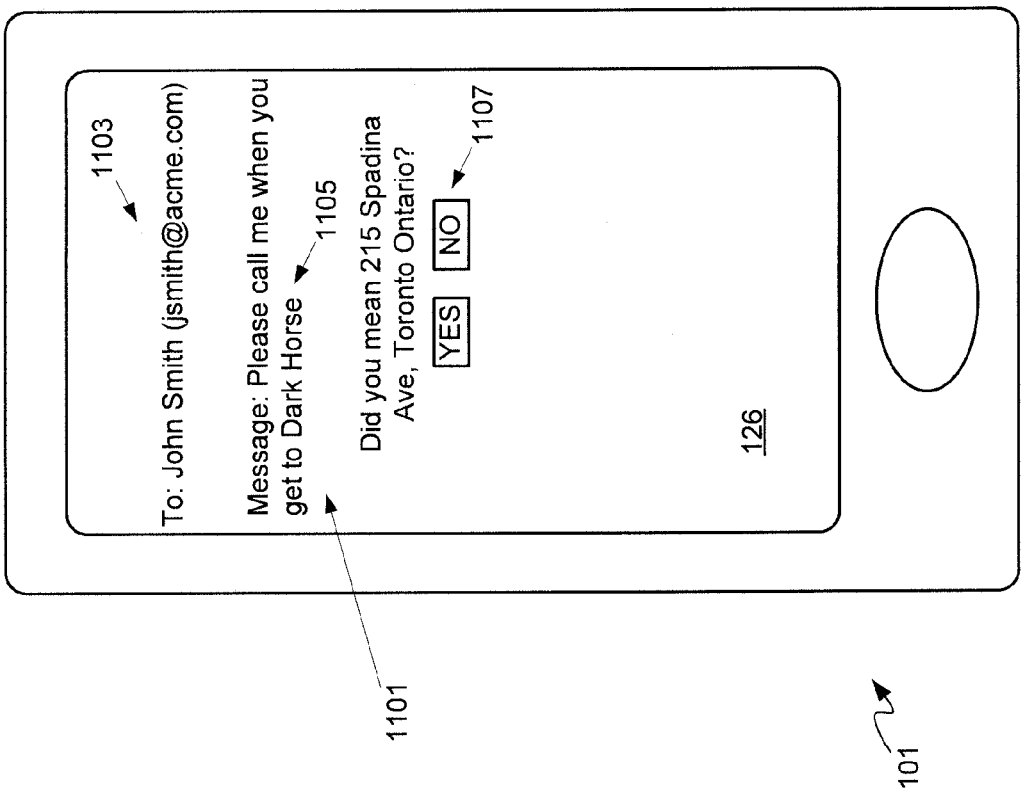
1103
To: John Smith (jsmith@acme.com)
Message: Please call me when you get to Dark Horse
1105
Did you mean 215 Spadina Ave, Toronto Ontario?
1107
YES
NO
126
1101
101

Fig. 11

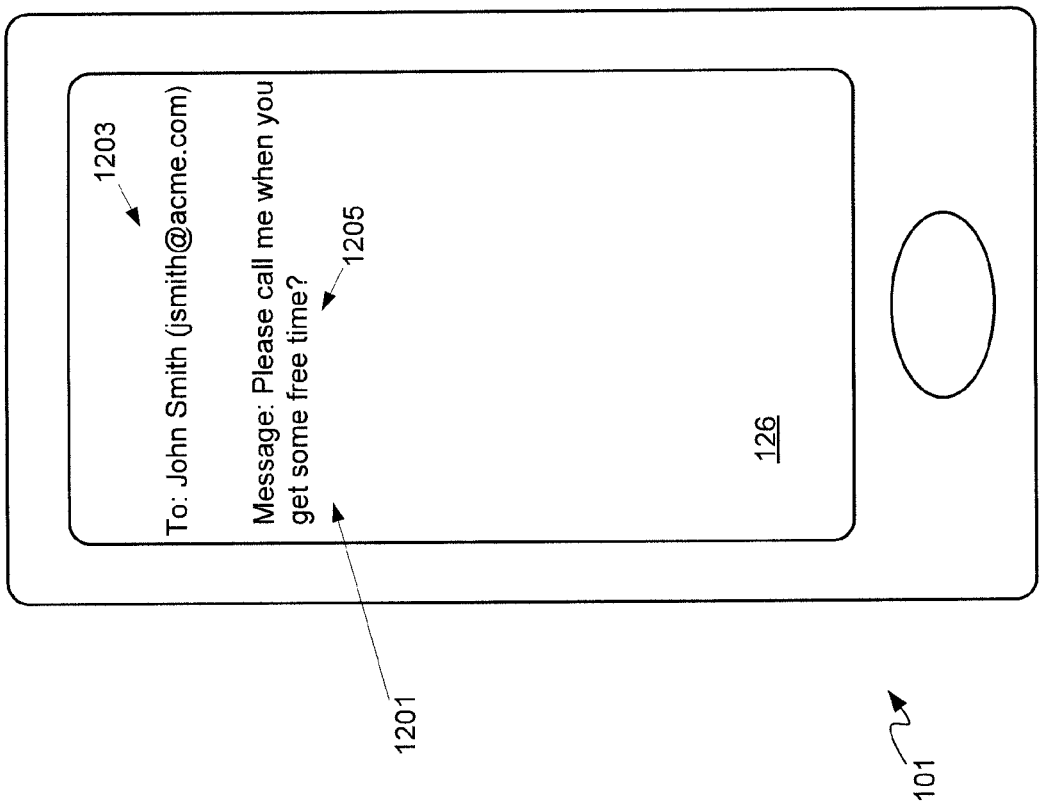
1203
To: John Smith (jsmith@acme.com)
Message: Please call me when you get some free time?
1205
126
1201
101

Fig. 12

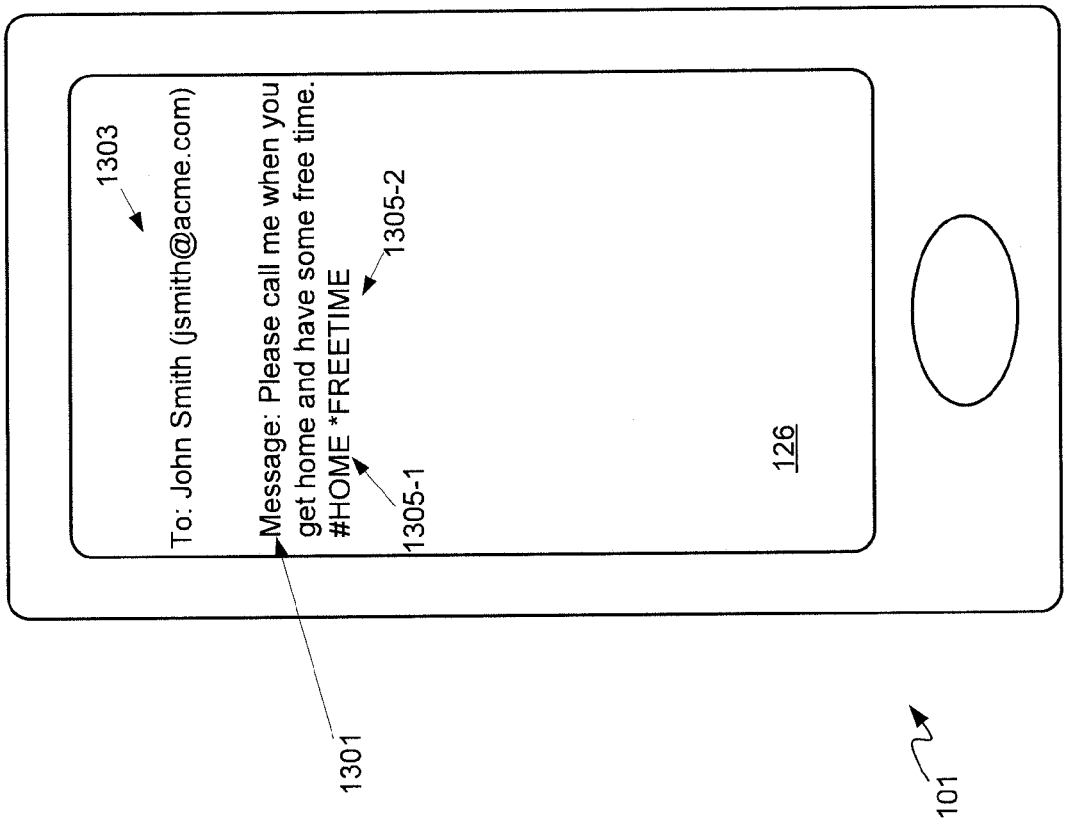
1303
To: John Smith (jsmith@acme.com)
Message: Please call me when you get home and have some free time. #HOME *FREETIME
1305-2
1305-1
126
1301
101

Fig. 13

METHOD, SYSTEM AND APPARATUS FOR LOCATION AND TIME-BASED MESSAGING USING TEXT-BASED TAGS

FIELD

The specification relates generally to mobile devices, and specifically to a method, system and apparatus for location and time-based messaging using text-based tags.

BACKGROUND

The evolution of computers is currently quite active in the mobile device environment. It is now well-known to including calendaring, contacts, and messaging functions in mobile devices. More recently, there has been a veritable explosion of the number and type of applications that are configured to the unique form factors and computing environments of mobile devices.

BRIEF DESCRIPTIONS OF THE DRAWINGS

For a better understanding of the various implementations described herein and to show more clearly how they may be carried into effect, reference will now be made, by way of example only, to the accompanying drawings in which:

FIG. **1** depicts a system for location and time-based messaging using textual tags, according to non-limiting implementations.

FIG. **2** depicts a contact file, according to non-limiting implementations.

FIG. **3** depicts a calendar file, according to non-limiting implementations.

FIG. **4** depicts a method for location and time-based messaging using textual tags, according to non-limiting implementations.

FIG. **5** depicts a graphic user interface for generating a location-based message with a textual tag associated with a contact file, according to non-limiting implementations.

FIG. **6** depicts the system of FIG. **1** in which a textual tag is associated with a location from a contact file, according to non-limiting implementations.

FIG. **7** depicts the system of FIG. **1** in which a location-based message is delivered to a destination device, according to non-limiting implementations.

FIG. **8** depicts a graphic user interface for generating a time-based message with a textual tag associated with a calendar file, according to non-limiting implementations.

FIG. **9** depicts the system of FIG. **1** in which a time-based message is delivered to a destination device, according to non-limiting implementations.

FIG. **10** depicts a graphic user interface for generating a location-based message with a textual tag that includes a postal address, according to non-limiting implementations.

FIG. **11** depicts a graphic user interface for generating a location-based message with a textual tag that includes one or more keywords that can be associated with a location, according to non-limiting implementations.

FIG. **12** depicts a graphic user interface for generating a time-based message with a textual tag that includes a key word that can be associated with a calendar file, according to non-limiting implementations.

FIG. **13** depicts a graphic user interface for generating a location-based and time-based message with a textual tag associated with a contact file and another textual tag associated with a calendar file, according to non-limiting implementations.

DETAILED DESCRIPTION

In general, this disclosure is directed to a system for location-based messaging in which text messages include text-based tags that include keywords that can be associated with locations for delivery of a message and/or times for delivery of a message. The association can occur using a contact file, a calendar file and/or using a mapping application. The association can occur at a device originating the message and/or at a server that is to deliver the message. For example, location tagging can occur at the originating device and/or a server, and the time tagging can occur at the server, the server having access to a timetable associated with a destination device. The server then delivers the message to the destination device when the destination device is at the location specified in the tag and/or the server delivers the message to the destination device at the associated time.

In this specification, elements may be described as "configured to" perform one or more functions or "configured for" such functions. In general, an element that is configured to perform or configured for performing a function is enabled to perform the function, or is suitable for performing the function, or is adapted to perform the function, or is operable to perform the function, or is otherwise capable of performing the function.

It is understood that for the purpose of this specification, language of "at least one of X, Y, and Z" and "one or more of X, Y and Z" can be construed as X only, Y only, Z only, or any combination of two or more items X, Y, and Z (e.g., XYZ, XY, YZ, ZZ, and the like). Similar logic can be applied for two or more items in any occurrence of "at least one . . . " and "one or more . . . " language.

An aspect of the specification provides a device comprising: a processor, a memory, a communication interface, the processor configured to: receive, at the processor, a message and an address of a destination device, the message comprising text for delivery to the destination device, the text comprising a text-based tag, the tag comprising one or more keywords associated with one or more of a location and a time to deliver the message to the destination device; process, at the processor, the tag to associate one or more of the location and the time with the message; and, transmit, using the communication interface, the message for delivery to the destination device using the address, at one or more of the location and the time.

The processor can be further configured to process the tag to associate one or more of the location and the time with the message by: extracting the one or more keywords from the tag; and, comparing the one or more keywords to one or more of a contact file associated with the address and a calendar file associated with the address to extract one or more of the location and the time from one or more of the contact file and the calendar file.

The processor can be further configured to process the tag to associate the location with the message by: extracting the one or more keywords from the tag; inputting the one or more keywords to a mapping application; and, receiving the location from the mapping application.

The processor can be further configured to: input one more words in the text to one or more of a contact file and a mapping application; and, populate the tag with a location from one or more of the contact file and the mapping application.

The processor can be further configured to transmit the message for delivery to the destination device using the address, at the location by: receiving current locations of the

destination device; and, when the destination device is within a given distance from the location, transmit the message to the destination device.

The processor can be further configured to transmit the message for delivery to the destination device using the address, at the time by: determining a current time; and, when the time is about equal to the current time, transmitting the message to the destination device.

The tag can comprise a given textual character.

The one or more keywords can comprise respective text defining the location.

The one or more keywords can comprise respective text associated with a field of a contact file.

The one or more keywords can comprise respective text associated with a field of a calendar application.

Another aspect of the specification provides a method comprising: at a device comprising a processor, a memory, and a communication interface, receiving, at the processor, a message and an address of a destination device, the message comprising text for delivery to the destination device, the text comprising a text-based tag, the tag comprising one or more keywords associated with one or more of a location and a time to deliver the message to the destination device; processing, at the processor, the tag to associate one or more of the location and the time with the message; and, transmitting, using the communication interface, the message for delivery to the destination device using the address, at one or more of the location and the time.

Processing the tag to associate one or more of the location and the time with the message can comprise: extracting the one or more keywords from the tag; and, comparing the one or more keywords to one or more of a contact file associated with the address and a calendar file associated with the address to extract one or more of the location and the time from one or more of the contact file and the calendar file.

Processing the tag to associate the location with the message can comprise: extracting the one or more keywords from the tag; inputting the one or more keywords to a mapping application; and, receiving the location from the mapping application.

The method can further comprise: inputting one or more words in the text to one or more of a contact file and a mapping application; and, populating the tag with a location from one or more of the contact file and the mapping application.

Transmitting the message for delivery to the destination device using the address, at the location can comprise: receiving current locations of the destination device; and, when the destination device is within a given distance from the location, transmitting the message to the destination device.

Transmitting the message for delivery to the destination device using the address, at the time can comprise: determining a current time; and, when the time is about equal to the current time, transmitting the message to the destination device.

The tag can further comprise a given textual character.

The one or more keywords can comprise respective text defining the location.

The one or more keywords can comprise respective text associated with a field of a contact file.

The one or more keywords can comprise respective text associated with a field of a calendar application.

Yet a further aspect of the specification provides a computer program product, comprising a computer usable medium having a computer readable program code adapted to be executed to implement a method comprising: at a device comprising a processor, a memory, and a communication interface, receiving, at the processor, a message and an address of a destination device, the message comprising text for delivery to the destination device, the text comprising a text-based tag, the tag comprising one or more keywords associated with one or more of a location and a time to deliver the message to the destination device; processing, at the processor, the tag to associate one or more of the location and the time with the message; and, transmitting, using the communication interface, the message for delivery to the destination device using the address, at one or more of the location and the time. The computer usable medium can comprises a non-transitory computer usable medium.

FIG. **1** depicts a system **100** for location and time-based messaging using textual tags, system **100** comprising a device **101**, a server **103**, a device **105**, in communication using at least one communication network **107** (interchangeably referred to hereafter as network **107**), and respective links **109-1**, **109-2**, **109-3** (interchangeably referred to hereafter, collectively, as links **109**, and generically as a link **109**) thereto, according to non-limiting implementations. Device **101** comprises a processor **120** interconnected with a memory **122**, a communications interface **124** (interchangeably referred to hereafter as interface **124**), a display **126** and an input device **128**, optionally a microphone **130** and speaker **132**. Server **103** generally comprises a processor **151** interconnected with a memory **152** and a communication interface **154** (interchangeably referred to hereafter as interface **154**). While not depicted, device **105** comprises a processor, a memory, a communication interface, a display, and optionally a microphone and a speaker. Furthermore, system **100** includes components for determining a current location of device **105** which can be determined and transmitted to one or more of server **103** and device **101**. Hence, in some implementations, device **105** further comprises a location determining device, including but not limited to, a Global Positioning System (GPS) device; in yet further implementations, system **100** comprises components for determining a location of device **105** using triangulation techniques and the like.

As will be explained in detail below, one or more of device **101** and server **103** are configured to: receive a message and an address of a destination device, the message comprising text for delivery to the destination device, the text comprising a text-based tag, the tag comprising one or more keywords associated with one or more of a location and a time to deliver the message to the destination device; process the tag to associate one or more of the location and the time with the message; and, transmit the message for delivery to the destination device using the address, at one or more of the location and the time. While it is assumed herein that device **105** comprises a destination device, system **100** can comprise any number of destination devices, and indeed methods described herein can be applied for any number of destination devices.

Links **109** comprises any suitable links for enabling device **101**, **105** and server **103** to communicate with network **107**. Links **109** can hence each include any suitable combination of wired and/or wireless links, wired and/or wireless devices and/or wired and/or wireless networks, including but not limited to any suitable combination of USB (universal serial bus) cables, serial cables, wireless links, cell-phone links, cellular network links (including but not limited to 2G, 2.5G, 3G, 4G+, and the like) wireless data, Bluetooth™ links, NFC (near field communication) links, WiFi links, WiMax links, packet based links, the Internet, analog networks, the PSTN (public switched telephone network), access points, and the like, and/or a combination.

Device **101** can be any type of electronic device that can be used in a self-contained manner. Device **101** includes, but is not limited to, any suitable combination of electronic devices,

communications devices, computing devices, personal computers, laptop computers, portable electronic devices, mobile computing devices, portable computing devices, tablet computing devices, laptop computing devices, desktop phones, telephones, PDAs (personal digital assistants), cellphones, smartphones, e-readers, internet-enabled appliances and the like. Other suitable devices are within the scope of present implementations.

FIG. **1** further depicts a schematic diagram of device **101** according to non-limiting implementations. It should be emphasized that the structure of device **101** in FIG. **1** is purely an example, and contemplates a device that can be used for both wireless voice (e.g. telephony) and wireless data communications (e.g. email, web browsing, text, and the like). However, while FIG. **1** contemplates a device that can be used for telephony and/or messaging, in other implementations, device **101** can comprise a device configured for implementing any suitable specialized functions, including but not limited to one or more of telephony, messaging, computing, appliance, and/or entertainment related functions.

Device **101** comprises at least one input device **128** generally configured to receive input data, and can comprise any suitable combination of input devices, including but not limited to a keyboard, a keypad, a pointing device, a mouse, a track wheel, a trackball, a touchpad, a touch screen and the like. Other suitable input devices are within the scope of present implementations. In specific non-limiting implementations described herein, input device **128** comprises a touch screen for receiving touch input data.

Input from input device **128** is received at processor **120** (which can be implemented as a plurality of processors, including but not limited to one or more central processors (CPUs) and/or one or more processing units; either way, processor **120** comprises a hardware element of device **101**). Processor **120** is configured to communicate with memory **122** comprising a non-volatile storage unit (e.g. Erasable Electronic Programmable Read Only Memory ("EEPROM"), Flash Memory) and a volatile storage unit (e.g. random access memory ("RAM")). Programming instructions that implement the functional teachings of device **101** as described herein are typically maintained, persistently, in memory **122** and used by processor **120** which makes appropriate utilization of volatile storage during the execution of such programming instructions. Those skilled in the art recognize that memory **122** is an example of computer readable media that can store programming instructions executable on processor **120**. Furthermore, memory **122** is also an example of a memory unit and/or memory module.

In particular, memory **122** stores a messaging application **150** that, when processed by processor **120**, enables processor **120** to: receive a message and an address of a destination device, the message comprising text for delivery to the destination device, the text comprising a text-based tag, the tag comprising one or more keywords associated with one or more of a location and a time to deliver the message to the destination device. In some implementations, processor **120** processing application **150** enables processor **120** to process the tag to associate one or more of the location and the time with the message. In yet further implementations, processor **120** processing application **150** enables processor **120** to transmit the message for delivery to the destination device using the address, at one or more of the location and the time. However, in other implementations described below, one or more of these functions can occur at server **103**.

Furthermore, application **150** is an example of programming instructions stored at memory **122**.

In some implementations, memory **122** can further store one or more contact files, for example a contact file **160** associated with device **105**. For example, with reference to FIG. **2**, contact file **160** can store information associated with device **105** including, but not limited to, a name of a user of device **105**, one or more network addresses associated with device **105**, including but not limited to an email address, a geographical work address of a user of device **105**, and a geographical home address of a user of device **105**. Other contact information can be stored in contact file **160**. Further, while FIG. **2** depicts a particular format of contact file **160**, contact file **160** can have any suitable format, including, but not limited to, a database format, and the like.

Returning to FIG. **1**, in some implementations, memory **122** can further store a mapping application **170** configured to determine a geographic location from a keywords; while described in further detail below, mapping location **170** can, for example, receive a key word, such as the name of a coffee shop, and the like, and return a geographic location of the coffee shop by querying a mapping server (not depicted), and the like.

Processor **120** can also be configured to communicate with a display **126**, and optionally a microphone **130** and a speaker **132**. Display **126** comprises any suitable one of or combination of CRT (cathode ray tube) and/or flat panel displays (e.g. LCD (liquid crystal display), plasma, OLED (organic light emitting diode), capacitive or resistive touch screens, and the like). When display **126** comprises a touch screen, display **126** and input device **128** are combined into one apparatus. Microphone **130**, when present, comprises any suitable microphone for receiving sound data. Speaker **132**, when present, comprises any suitable speaker for providing sound data, audible alerts, audible communications from remote communication devices, and the like, at device **101**.

In some implementations, input device **128** and display **126** are external to device **101**, with processor **120** in communication with each of input device **128** and display **126** via a suitable connection and/or link.

Processor **120** also connects to interface **124**, which can be implemented as one or more radios and/or connectors and/or network adaptors, configured to communicate with network **107** via link **109-1**. In general, interface **124** is configured to correspond with the network architecture that is used to implement link **109-1**, as described above. In other implementations a plurality of links with different protocols can be employed and thus interface **124** can comprise a plurality of interfaces to support each link.

In any event, any suitable combination of interfaces is within the scope of present implementations.

While not depicted, device **101** can comprise a time device including but not limited to a clock device, a clock at processor **120**, a software-based clock and the like. Regardless of a configuration of the time device, the time device can be used by processor **120** to determine a current time.

While not depicted, device **101** further comprises a power source, for example a connection to a battery, a power pack and the like and/or a connection to a main power supply and a power adaptor (e.g. and AC-to-DC (alternating current to direct current) adaptor, and the like), which can be used to power device **101** and/or charge a battery and the like.

Further, it should be understood that in general a wide variety of configurations for device **101** are contemplated.

FIG. **1** further depicts a schematic diagram of server **103**. Server **103** generally comprises a server configured to convey messages between devices **101**, **105**, as will be described in more detail below. Server **103** can be based on any well-known server environment including a module that houses

one or more central processing units, volatile memory (e.g. random access memory), persistent memory (e.g. hard disk devices) and network interfaces to allow server **103** to communicate over link **109-2**. For example, server **103** can be a Sun Fire V480 running a UNIX operating system, from Sun Microsystems, Inc. of Palo Alto Calif., and having four central processing units (including but not limited to processor **151**) each operating at about nine-hundred megahertz and having about sixteen gigabytes of random access memory (including but not limited to memory **152**, which can comprise any suitable combination of volatile and non-volatile memory). However, it is to be emphasized that this particular server is merely exemplary, and a vast array of other types of computing environments for server **103** are contemplated. For example, server **103** can comprise any suitable number of servers that can perform different functionality of server implementations described herein.

Interface **154** can be implemented as one or more radios and/or connectors and/or network adaptors, configured to communicate with network **107** via link **109-2**. In general, interface **154** is configured to correspond with the network architecture that is used to implement link **109-2**, as described below. In other implementations a plurality of links with different protocols can be employed and thus interface **154** can comprise a plurality of interfaces to support each link.

In some implementations, as depicted, memory **152** stores a copy of contact file **160**, a calendar file **165** associated with device **105**, an application **180** and a mapping application **190**. Calendar file **165** comprises a schedule associated with device **105**. For example, with reference to FIG. **3**, calendar file **165** can include a schedule of events for one or more days, where times where events are not scheduled are defined as free time and/or times outside of work times are defined as personal times. Furthermore, calendar file **165** can include a definition of work hours and non-work hours; for example time from 09.00 to 17.00 Monday to Friday can be defined as work time, while other time can be defined as non-work time and/or personal time. However, while FIG. **3** depicts a given format for calendar file **165**, calendar file **165** can have any format, including, but not limited to a database format.

While not depicted, server **103** can comprise a time device including but not limited to a clock device, a clock at processor **151**, a software-based clock and the like. Regardless of a configuration of the time device, the time device can be used by processor **120** to determine a current time.

While also not depicted, in some implementations, device **101** can be one or more of access calendar file **165** at server **103** by querying server **103** for data in calendar file **165** over network **107** and links **109**, and store a copy of calendar file **165**.

Returning to FIG. **1**, memory **152** further stores a messaging application **180** that, when processed by processor **151**, enables processor **151** to: receive a message and an address of a destination device, the message comprising text for delivery to the destination device, the text comprising a text-based tag, the tag comprising one or more keywords associated with one or more of a location and a time to deliver the message to the destination device; process the tag to associate one or more of the location and the time with the message; and transmit the message for delivery to the destination device using the address, at one or more of the location and the time. However, in other implementations, one or more of these functions can occur at device **101**.

Furthermore, application **180** is an example of programming instructions stored at memory **152**.

In some implementations, memory **152** can further store a mapping application **190** configured to determine a geographic location from a keyword; while described in further detail below, mapping application **190** can, for example, receive a key word, such as the name of a coffee shop, and the like, and return a geographic location of the coffee shop by querying a mapping server (not depicted), and the like. In other words, mapping application **190** can be similar to mapping application **170**.

Device **105** can be any type of portable electronic device that can be used in a self-contained manner. Device **105** includes, but is not limited to, any suitable combination of electronic devices, communications devices, computing devices, personal computers, laptop computers, portable electronic devices, mobile computing devices, portable computing devices, tablet computing devices, laptop computing devices, telephones, PDAs (personal digital assistants), cellphones, smartphones, e-readers, internet-enabled portable appliances and the like. Other suitable devices are within the scope of present implementations. While a schematic diagram of device **105** is not depicted, device **105** can be schematically similar to device **101**, though device **105** is generally portable and/or can be transported from place to place and/or can be configured to be held and/or carried by a human hand and/or is transportable in a pocket and/or bag of a user. Further, as described above, system **100** includes components for determining a location of device **105**, including, but not limited to a GPS device at device **105**, components for determining a location of device **105** using triangulation techniques and the like.

Attention is now directed to FIG. **4** which depicts a flowchart of a method **400** for location and time-based messaging using textual tags, according to non-limiting implementations. In order to assist in the explanation of method **400**, it will be assumed that method **400** is performed using system **100**. Furthermore, the following discussion of method **400** will lead to a further understanding of system **100** and its various components. However, it is to be understood that system **100** and/or method **400** can be varied, and need not work exactly as discussed herein in conjunction with each other, and that such variations are within the scope of present implementations.

In some implementations, method **400** is implemented in system **100** by processor **120** of device **101**. Indeed, method **400** is one way in which device **101** can be configured. However, in other implementations, method **400** is implemented in system **100** by processor **151** of server **103**, and method **400** can be one way in which server **103** is configured. In yet further implementations, method can be implemented in system **100** by a combination of processor **120** and processor **151**.

Regardless, it is to be emphasized, that method **400** need not be performed in the exact sequence as shown, unless otherwise indicated; and likewise various blocks may be performed in parallel rather than in sequence; hence the elements of method **400** are referred to herein as "blocks" rather than "steps". It is also to be understood, however, that method **400** can be implemented on variations of system **100** as well.

At block **401**, one or more processors **120**, **151** receives a message and an address of a destination device, the message comprising text for delivery to the destination device, the text comprising a text-based tag, the tag comprising one or more keywords associated with one or more of a location and a time to deliver the message to the destination device.

At block **403**, one or more processors **120**, **151** processes the tag to associate one or more of the location and the time with the message.

At block **405**, one or more processors **120**, **151** transmits the message for delivery to the destination device using the address, at one or more of the location and the time.

Method **400** will now be discussed in more detail with reference to FIGS. **5** to **13**, with FIGS. **6**, **7** and **9** being substantially similar to FIG. **1**, with like elements having like numbers.

For example, consider a scenario in which method **400** is being implemented at device **101**, and text message is being generated thereat, and specifically, a user of device **101** wishes to send a message to device **105**, but only when device **105** is at or near the work address in contact file **160**. Attention is next directed to FIG. **5**, which depicts a perspective view of a non-limiting implementation of device **101** with a message **501** being generated at display **126** in a graphic user interface (GUI). While not depicted, it is assumed that message **501** is received using input device **128** (e.g. block **401** of method **400**), including, but not limited to, a virtual keyboard. Message **501** is received with an address **503** of device **105** (e.g. jsmith@acme.com and/or an alias thereof, e.g. "John Smith"), and text of message **501** includes text and text-based tag **505** (e.g. "#WORK") comprising one or more keywords (e.g. WORK) associated with a location to deliver message to destination device **105**.

While address **503** is depicted as an email address and/or an alias thereof, an address within the present specification can include, but is not limited to, a network address, an email address, a telephone number, a mobile telephone number, a PIN (personal identification number), a MAC (media access control) address and the like.

Furthermore, while message **501** includes text "Please call me when get to work", in addition to tag **505**, in other implementations, messages within the present specification can include, but is not limited to, an image file and/or image content, a video file and/or video content, an audio file and/or audio content, a multimedia and/or multimedia content, and the like. Indeed, in some implementations a message within the present specification can be absent of text, other than a text-based tag, but include multimedia content and the like. In yet further implementations, messages within the present specification can be blank, other than the text-based tag; for example, a message comprising text can comprise only the text-based tag.

With reference to FIG. **6**, device **101** is processing application **150**, and processor **120** extracts the one or more keywords from tag **505**, and, compares the one or more keywords to contact file **160** associated with the address **503** to extract a location **601** from contact file **160**. Specifically, as tag **505** includes the keyword "WORK" which is the same as an identifier of an address stored in contact file **160** (e.g. "Work", ignoring the term "address"), a location **601** associated with the "Work" address is extracted from contact file **160**, and associated with message **501** (e.g. block **403** of method **400**). Message **501** and location **601** are then transmitted to server **103** (e.g. block **405** of method **400**), which acts as an intermediary between devices **101**, **105**. While not depicted, message **501** is transmitted to server **103** with address **503**. Furthermore, location **601** can be transmitted as metadata of message **501** and/or location **601** can be added as text to tag **505**.

Alternatively, message **501** can be transmitted to server **103** without device **101** extracting location **601** from contact file **160**, and processor **151** can extract location **601** from the copy of contact file **160** stored at memory **152** when processor **151** is processing application **180**.

Either way, server **103** does not immediately transmit message **501** to device **105**. Rather, with reference to FIG. **7**, processor **151** processes application **180** and server **103** receives current locations **701** of (destination) device **105**; and, when destination device **105** is within a given distance from location **601**, server **103** transmits message **1** to the destination device **105** using address **503** (e.g. an alternative implementation of block **405** of method **400**).

In some implementations, device **105** can transmit locations **701** to server **103** by using a GPS at device **105** to determine locations of device **105**. In other implementations, components of network **107** can use triangulation techniques to determine locations of device **105**. In some of these implementations, server **103** can request locations **701**, while in other implementations locations **701** can be pushed to server **103** by device **105** and/or by components of network **107**.

Either way, when location **601** is about equal to a location **701**, message **501** is transmitted from server **103** to device **105**. For example, while not depicted, it is assumed in system **100** that device **105** is portable and is being transported around a geographical area; hence, message **501** is not transmitted to device **105** until device **105** is at or near location **601**. Hence, using the example shown in FIG. **5**, the message "Please call me when you get to the office" is not transmitted to device **105** until device **105** is at a work address in contact file **160**.

Location **601** need not be exactly equal to a location **701**, but location **601** can be within a given distance from location **701**. Such geofencing boundaries can be provisioned using one or more of device **101** and server **103** in a provisioning step. Alternatively, such boundaries can be set using tag **505**: for example, tag **505** can be modified to "#WORK1 km", so that message **501** is delivered when device **105** is within 1 km of a location associated with the keyword "WORK" in contact file **160**.

While not depicted, mapping applications **170**, **190** can be used to define locations **601**, **701**, for example by converting an address to map coordinates and/or vice versa. In other words, locations **701** can be received as longitude/latitude coordinates while location **601** can be a postal address; hence mapping locations **170**, **190** can be used to convert locations **601**, **701** to a similar format.

Next, consider a scenario in which method **400** is being implemented at server **103**, and a text message is being generated at device **101**: specifically, a user of device **101** wishes to send a message to device **105**, but only when a user of device **105** has free time. Attention is next directed to FIG. **8**, which depicts a perspective view of a non-limiting implementation of device **101** with a message **801** being generated at display **126**. While not depicted, it is assumed that message **801** is received using input device **128**, including, but not limited to, a virtual keyboard. Message **801** is received with an address **803** of device **105** (e.g. jsmith@acme.com and/or an alias thereof, e.g. "John Smith"), and text of message **801** includes text and text-based tag **805** (e.g. "FREETIME") comprising one or more keywords (e.g. FREETIME) associated with a time that message is to be delivered to destination device **105**.

With reference to FIG. **9**, device **101** transmits message **801** to server **103**, receives message **801** with address **803** (e.g. block **401** of method **400**), which is processing application **180** at processor **151**, and processor **151** extracts the one or more keywords from tag **805**, and, compares the one or more keywords to calendar file **165** extract a time **901** from calendar file **165** (e.g. block **403** of method **400**). Specifically, as tag **805** includes the keyword "FREETIME", processor **151** processes calendar file **165** to extract a time that next instance of free time occurs in calendar file **165**. It is hence assumed that processor **151** can determine a current time, and

process calendar file **165** to determine free time and specifically when free time next occurs. Presuming that message **801** is received at server **103** around 12.30 on Monday Aug. 11, 2014, with reference to FIG. **3**, processor **151** can determine that a next instance of free time in calendar file **165** occurs at 14.00 on Monday Aug. 11, 2014, as an event that is occurring at 12.30 ends at 14.00.

Hence, server **103** does not immediately transmit message **801** to device **105** (unless message **801** is received at a time designated as free in calendar file). Rather, server **103** waits until a current time is about equal to a time designated as free time in calendar file **165** and transmits message **801** at that time (e.g. block **405** of method **400**).

In alternative implementations, a time that message **801** is to be transmitted to device **105** can be determined at device **101**, presuming device **101** has access to calendar file **165** and/or stores a copy of calendar file **165**.

Next, consider a scenario in which method **400** is being implemented at device **101**, and a text message is to be delivered to device **105** but only when device **105** is at an address that is not located at contact file **160**. Attention is next directed to FIG. **10**, which depicts a perspective view of a non-limiting implementation of device **101** with a message **1001** being generated at display **126**. While not depicted, it is assumed that message **1001** is received using input device **128** (e.g. block **401** of method **400**), including, but not limited to, a virtual keyboard. Message **1001** is received with an address **1003** of device **105** (e.g. jsmith@acme.com and/or an alias thereof, e.g. "John Smith"), and text of message **1001** includes text and text-based tag **1005** (e.g. "#215spadinaavetorontoontario") comprising one or more keywords (e.g. 215spadinaavetorontoontario) associated with a location to deliver message to destination device **105**.

In other words, tag **1005** can comprise a postal address, and the like, and device **101** can extract a location from tag **1005**. Method **400** then proceeds as described above with reference to FIGS. **6** and **7**.

Next, consider a scenario in which method **400** is being implemented at device **101**, and a text message is to be delivered to device **105** but only when device **105** is at an address that is not located at contact file **160**, and a user of device **101** knows a name of a location but not a postal address. Attention is next directed to FIG. **11**, which depicts a perspective view of a non-limiting implementation of device **101** with a message **1101** being generated at display **126**. While not depicted, it is assumed that message **1101** is received using input device **128** (e.g. block **401** of method **400**), including, but not limited to, a virtual keyboard. Message **1101** is received with an address **1103** of device **105** (e.g. jsmith@acme.com and/or an alias thereof, e.g. "John Smith"), and text of message **1101** includes text that includes a name of a location (e.g. "Dark Horse", a name of a coffee shop); processor **120** inputs one or more words of text into mapping location **170** to determine if any words of text of message **1101** comprises one or more keywords that could represent a text-based location tag. As depicted, the keywords "Dark Horse" can be associated with a postal address "215 Spadina Ave, Toronto, Ontario" which can be retrieved from mapping location **170** using keywords "Dark Horse", and provided in a pop-up **1107**, and/or the like, for acceptance using a virtual button, for example "YES" as depicted. Presuming the postal address is accepted, processor **120** populates tag **1105** with the location from mapping application **170**; such population can be provided at display **126** (e.g. the address is added to key words "Dark Horse") or not provided (e.g. the address is not added to key words "Dark Horse", but populated as metadata to message **1101**).

Method **400** then proceeds as described above with reference to FIGS. **6** and **7**.

Alternatively, the address could be extracted from a contact file similar to contact file **160**, for example a contact file associated with "Dark Horse" that includes an address. When the contact file includes more than one address, pop-up **1107** can include an option to select one or more of the addresses.

In yet a further alternative, pop-up **1107** can be optional and population of tag **1105** can occur automatically. For example, device **101** can be configured to recognize other keywords in message **1101**, such as "Can you call me when", which can cause device **101** to automatically populate a location-based tag **1105** when an address associated with keywords is found using a mapping application and/or a contact file. In such implementations of method **400**, method **400** can alternatively be performed, at least in part, by server **103**.

Hence, one or more of processors **120**, **151** can be further configured to process a tag to associate a location with the message by: extracting the one or more keywords from the tag; inputting the one or more keywords to a mapping application; and, receiving the location from the mapping application.

Alternatively, one or more of processors **120**, **151** can be further configured to: input one more words in the text of a message to one or more of a contact file and a mapping application; and, populate the tag with a location from one or more of the contact file and the mapping application.

Next, consider a scenario in which method **400** is being implemented at server **103** and a text message is to be delivered to device **105** but only when a user of device **105** has free time, and a user of device **101** does not explicitly tag the text message but includes one or more time-based keywords. Attention is next directed to FIG. **12**, which depicts a perspective view of a non-limiting implementation of device **101** with a message **1201** being generated at display **126**. While not depicted, it is assumed that message **1201** is received using input device **128** (e.g. block **401** of method **400**), including, but not limited to, a virtual keyboard. Message **1201** is received with an address **1203** of device **105** (e.g. jsmith@acme.com and/or an alias thereof, e.g. "John Smith"), and text of message **1201** includes text that comprises time-based keywords "free time". Message **1201** is transmitted to server **103**, similar to FIG. **9**, and server **103** extracts time-based keywords from message **1201** and compares the time-based key words to calendar file **165** to extract a next free time from calendar file **165**. Tag **1205** is hence populated automatically at server **103** using calendar file **165**.

Present implementations, further include various formats for tags and/or keywords. For example, in some implementations, a tag can comprise a given textual character, including, but not limited to, a hash character "#", as in FIGS. **5** and **10**, an asterisk "*", as in FIG. **8**, and the like. Such given textual characters can comprise an indicator of a location-based tag and/or a time-based tag, and the like.

In some implementations, as in FIGS. **10**, and **11**, one or more keywords of a tag can comprise respective text defining a location and/or a time. In further implementations, as in FIG. **5**, one or more keywords can comprise respective text associated with a field of a contact file. In yet further implementations, as in FIGS. **8** and **12**, one or more keywords can comprise respective text associated with a field of a calendar application.

Furthermore, location-based tags and time-based tags can be combined in a message. For example, attention is next directed to FIG. **13**, which depicts a perspective view of a non-limiting implementation of device **101** with a message **1301** being generated at display **126**. While not depicted, it is

assumed that message **1301** is received using input device **128** (e.g. block **401** of method **400**), including, but not limited to, a virtual keyboard. Message **1301** is received with an address **1303** of device **105** (e.g. jsmith@acme.com and/or an alias thereof, e.g. "John Smith"), and text of message **1301** includes a location-based tag **1305-1**, similar to tag **505**, and a time-base tag **1305-2**, similar to tag **805**. Method **400** is hence implemented as in FIGS. **6** and **7**, and as in FIG. **9** so that device **101** associates a home address in contact file **160** with tag **1305-1**, and transmits message to server **103**, which determines free time associated with device **105**. Server **103** transmits message **1301** to device **105** when device **105** is at or near an address associated with tag **1305-1**, and at a time associated with tag **1305-2**.

Persons skilled in the art will appreciate that there are yet more alternative implementations and modifications possible. For example, a message can be tagged with more than one location-based tag and/or more than one time-based tag, the message delivered when a destination device is at or near one of the locations specified in the location-based tags and/or at a time specified in the time-based tags; however, the message is transmitted to the destination device once, i.e. a first time conditions specified in the tags are met. In other words, when message is tagged with two location-based tags indicating two different locations, the message is transmitted the first time the destination device is at and/or near one of the two locations, but when the destination device is at or near the other of the two locations, after the message was first sent, the message is not resent.

In yet further implementations, messages described herein can expire. For example, if conditions specified in tags of a message described herein are not met within a given time period, the message is not delivered. The expiry time period can also be specified in a tag (for example, "*EXPIRESIN2hrs" to tag a message that should only be delivered within 2 hours of transmitting from device **101**) and/or in a provisioning step at device **101** and/or server **103**.

While messages herein have been described as text messages, method **400** can be applied to email, SMS (short message service) messages, MMS (Multimedia messaging service) messages, and the like.

In yet further implementations given tags can be associated with given locations and/or given times. For example, while tags described herein can be populated with data from fields from a contact file and/or a calendar file, in other implementations, tags can be populated with data from a data file defining associations between tags and locations and/or tags and times. For example, a tag "#LOCATION1" can be associated with an address "1234Peter Street, Toronto, Ontario, M6L1B7, Canada", a tag "LOCATION2" can be associated with an address "753 Avenue Road, Toronto, Ontario, M9G2B9, Canada", and a tag "TIME2" can be associated with a time "14.00" of a day a message is transmitted. Such associations can be stored in a data file dedicated to storing such associations and populated in one or more provisioning steps using a graphic user interface and the like.

In yet further implementations, in an exchange of message between devices **101**, **105**, one or more messages can be location-tagged and/or time-tagged and such messages delivered are delivered during the exchange of messages (i.e. without delay) and re-delivered when the conditions specified in the tags are met. For example, such an exchange can include a message "Let's keep talking but call me later when you arrive home in case we forget something in this email exchange. I'm tagging this message so it will be resent as a reminder #HOME"; this message can be transmitted from device **101** to device **105** when device **101** sends the message, and a copy stored at server **103**. Further, the message is clearly one message in a message exchange between devices **101**, **105**. When device **105** is located at or near a location associated with the tag #HOME, server **103** again transmits the message to device **105** to remind a user of device **105** of the information in the message.

Various use cases of method **400** are now discussed.

In a first use case, a company sends a promotional mass message to devices registered to their members, the message location-tagged with one or more retail locations; once a member arrives at a location for a scheduled appointment, the message is pushed to their device. Furthermore, a server implementing method **400** can connect to an internal calendar of the company to access the scheduled appointment times and customize the tag to fit each recipient's appointment, within a time frame.

In a second use case, a company can hold a product release party and a tagged message can be sent to devices registered to subscriber-attendees welcoming them to the event, when they arrive at the event. In this use case, the messages can be tagged with the address of the location of the product release party. Once an attendee arrives at the product release party, they are pushed a welcome message. The messages can expire at end of the party so that if an invitee goes to the same location after the end of the party (e.g. the next day), the welcome message is not sent.

In a third use case, Dominik has been having trouble reaching Kay. Kay has been in meetings all day and hasn't read any of Dominik's emails. Dominik tags his next message 'freetime' and hits send. This message then is sent and delivered to Kay as soon as his schedule shows he is free. This allows for Dominik's message to be at the top of the message pile. In such a use case, method **400** can be implemented using enterprise level exchange servers so that access to Kay's calendar is available.

In a fourth use case, Dominik and Kay are having a back and forth conversation in regards to meeting up at a location. As in FIG. **11**, a device can recognize potential keywords and provides prompts for the user to add one or more location-based tags. In such use cases, the device can further "learn" a writing style and heuristically provide tags automatically when messages are being generated later.

In a fifth use case, Kay receives a message from a colleague one evening while out to dinner, the message tagged with one or more of a tag #WORK and a tag *WORKTIME. The colleague asks in the message if an item could be brought from his desk in Waterloo to Tahoe as Kay is travelling to Tahoe to meet the colleague. Waking up late and dealing with family life, the conversation from the night before slips Kay's mind when he heads to the office. As the message is location-tagged and/or time-tagged, when Kay arrives at the office, he receives the message again as a reminder to pick up the requested item before leaving for Tahoe.

Hence, provided herein are implementations of location and time-based messaging using textual tags integrated within the text of a message. While location and time-based messaging can occur using special interfaces to specify a location and/or a time for delivering a message, such interfaces generally need to be provided as add-ons to, and/or in applications different from, a messaging application, such that a user is required to exit a messaging GUI and enter GUI for specifying a location and/or time for delivering the message. The location and time-based textual tags described herein obviate the need for such additional applications and interfaces. Hence provided herein is a method, system and apparatus for location and time-based messaging using textual tags in which a device and/or a server receives a message

and an address of a destination device, the message comprising text for delivery to the destination device, the text comprising a text-based tag, the tag comprising one or more keywords associated with one or more of a location and a time to deliver the message to the destination device; the device and/or server processes the tag to associate one or more of the location and the time with the message; and, the device and/or server transmits the message for delivery to the destination device using the address, at one or more of the location and the time.

Those skilled in the art will appreciate that in some implementations, the functionality of devices **101**, **105** and server **103** can be implemented using pre-programmed hardware or firmware elements (e.g., application specific integrated circuits (ASICs), electrically erasable programmable read-only memories (EEPROMs), etc.), or other related components. In other implementations, the functionality of devices **101**, **105** and server **103** and server **103** can be achieved using a computing apparatus that has access to a code memory (not shown) which stores computer-readable program code for operation of the computing apparatus. The computer-readable program code could be stored on a computer readable storage medium which is fixed, tangible and readable directly by these components, (e.g., removable diskette, CD-ROM, ROM, fixed disk, USB drive). Furthermore, the computer-readable program can be stored as a computer program product comprising a computer usable medium. Further, a persistent storage device can comprise the computer readable program code. The computer-readable program code and/or computer usable medium can comprise a non-transitory computer-readable program code and/or non-transitory computer usable medium. Alternatively, the computer-readable program code could be stored remotely but transmittable to these components via a modem or other interface device connected to a network (including, without limitation, the Internet) over a transmission medium. The transmission medium can be either a non-mobile medium (e.g., optical and/or digital and/or analog communications lines) or a mobile medium (e.g., microwave, infrared, free-space optical or other transmission schemes) or a combination thereof.

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Persons skilled in the art will appreciate that there are yet more alternative implementations and modifications possible, and that the above examples are only illustrations of one or more implementations. The scope, therefore, is only to be limited by the claims appended hereto.

What is claimed is:

1. A device comprising:

a processor, a memory, a communication interface, the processor configured to:

receive, at the processor, a message and an address of a destination device, the message comprising text for delivery to the destination device, the text comprising a text-based tag, the tag comprising one or more keywords associated with one or more of a location and a time to deliver the message to the destination device; when the one or more keywords are associated with the location, the tag further comprises a first given textual character designating that one or more of the keywords are associated with the location; and when the one or more keywords are associated with the time, the tag further comprises a second given textual character designating that one or more of the keywords are associated with the time, the second given textual character different from the first textual character;

process, at the processor, the tag to associate one or more of the location and the time with the message by extracting the one or more keywords from the tag, and comparing the one or more keywords to one or more of a contact file associated with the address and a calendar file associated with the address to extract one or more of the location and the time from one or more of the contact file and the calendar file; and,

transmit, using the communication interface, the message for delivery to the destination device using the address, at one or more of the location and the time.

2. The device of claim **1**, wherein the processor is further configured to process the tag to associate the location with the message by:

extracting the one or more keywords from the tag;

inputting the one or more keywords to a mapping application; and,

receiving the location from the mapping application.

3. The device of claim **1**, wherein the processor is further configured to:

input one more words in the text to one or more of a contact file and a mapping application; and,

populate the tag with a location from one or more of the contact file and the mapping application.

4. The device of claim **1**, wherein the processor is further configured to transmit the message for delivery to the destination device using the address, at the time by:

determining a current time; and, when the time is about equal to the current time,

transmitting the message to the destination device.

5. The device of claim **1**, wherein the tag comprises the first given textual character followed by the one or more keywords comprising respective text nickname defining the location, and not the location itself.

6. The device of claim **1**, wherein the one or more keywords comprises respective text associated with a field of a contact file which in turn comprises: a respective text nickname of the location, the respective text nickname stored in the contact file in association with the location.

7. The device of claim **1**, wherein the tag comprises the second given textual character followed by the one or more keywords comprising respective text indicating a type of activity associated with a field of a calendar application.

8. A method comprising:

at a device comprising a processor, a memory, and a communication interface, receiving, at the processor, a message and an address of a destination device, the message comprising text for delivery to the destination device, the text comprising a text-based tag, the tag comprising one or more keywords associated with one or more of a location and a time to deliver the message to the destination device; when the one or more keywords are associated with the location, the tag further comprises a first given textual character designating that one or more of the keywords are associated with the location; and when the one or more keywords are associated with the time, the tag further comprises a second given textual character designating that one or more of the keywords are associated with the time, the second given textual character different from the first textual character;

processing, at the processor, the tag to associate one or more of the location and the time with the message by extracting the one or more keywords from the tag, and comparing the one or more keywords to one or more of

a contact file associated with the address and a calendar file associated with the address to extract one or more of the location and the time from one or more of the contact file and the calendar file; and,

transmitting, using the communication interface, the message for delivery to the destination device using the address, at one or more of the location and the time.

9. The method of claim **8**, wherein the processing the tag to associate the location with the message comprises:

extracting the one or more keywords from the tag;

inputting the one or more keywords to a mapping application; and,

receiving the location from the mapping application.

10. The method of claim **8**, further comprising:

inputting one more words in the text to one or more of a contact file and a mapping application; and,

populating the tag with a location from one or more of the contact file and the mapping application.

11. The method of claim **8**, wherein the transmitting the message for delivery to the destination device using the address, at the time comprises:

determining a current time; and, when the time is about equal to the current time,

transmitting the message to the destination device.

12. The method of claim **8**, wherein the tag comprises the first given textual character followed by the one or more keywords comprising respective text nickname defining the location, and not the location itself.

13. The method of claim **8**, wherein the one or more keywords comprises respective text associated with a field of a contact file which in turn comprises: a respective text nickname of the location, the respective text nickname stored in the contact file in association with the location.

14. The method of claim **8**, wherein the tag comprises the second given textual character followed by the one or more keywords comprising respective text indicating a type of activity associated with a field of a calendar application.

15. A non-transitory computer-readable medium storing a computer program, wherein execution of the computer program is for:

at a device comprising a processor, a memory, and a communication interface, receiving, at the processor, a message and an address of a destination device, the message comprising text for delivery to the destination device, the text comprising a text-based tag, the tag comprising one or more keywords associated with one or more of a location and a time to deliver the message to the destination device; when the one or more keywords are associated with the location, the tag further comprises a first given textual character designating that one or more of the keywords are associated with the location; and when the one or more keywords are associated with the time, the tag further comprises a second given textual character designating that one or more of the keywords are associated with the time, the second given textual character different from the first textual character;

processing, at the processor, the tag to associate one or more of the location and the time with the message by extracting the one or more keywords from the tag, and comparing the one or more keywords to one or more of a contact file associated with the address and a calendar file associated with the address to extract one or more of the location and the time from one or more of the contact file and the calendar file; and,

transmitting, using the communication interface, the message for delivery to the destination device using the address, at one or more of the location and the time.

16. The non-transitory computer-readable medium of claim **15**, wherein the tag comprises the first given textual character followed by the one or more keywords comprising respective text nickname defining the location, and not the location itself.

17. The non-transitory computer-readable medium of claim **15**, wherein the one or more keywords comprises respective text associated with a field of a contact file which in turn comprises: a respective text nickname of the location, the respective text nickname stored in the contact file in association with the location.

18. The non-transitory computer-readable medium of claim **15**, wherein the tag comprises the second given textual character followed by the one or more keywords comprising respective text indicating a type of activity associated with a field of a calendar application.

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